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## All-*trans* Retinoic Acid-Induced Labor in a Pregnant Patient With Acute Promyelocytic Leukemia

*To the Editor:* The clinical management of acute leukemia during pregnancy is difficult due to concerns regarding both teratogenic effects of chemotherapy and pregnancy complications related to myelosuppression [1]. Despite this, there is evidence that successful outcomes for mother and child may occur using standard chemotherapeutic agents, particularly in the second and third trimester. Acute promyelocytic leukemia (APL) occurs in women of childbearing age, and has been described in pregnant women. During the last decade, management of APL has changed and includes the use of all-*trans* retinoic acid (ATRA). ATRA is contraindicated during pregnancy due to the known teratogenic effects of retinoid compounds on the developing fetus. There have been a few case reports of pregnant women receiving ATRA during the second and third trimesters of pregnancy, and successful outcomes have occurred [2–6]. This case report describes a woman who was carrying a fetus with Potter's syndrome (oligohydramnios and bilateral renal agenesis) and who developed APL in the last trimester of pregnancy. This case differs from those reported previously because the initiation of ATRA therapy resulted in the onset of labor.

The patient was a 29-year-old white female who was noted to have oligohydramnios during her first trimester. The fetus was diagnosed with Potter's syndrome, and the patient refused termination of the pregnancy on religious grounds. She presented in week 29 of pregnancy with vaginal bleeding and was noted to have marked pancytopenia. Bone marrow exam was performed and showed the characteristic morphology of APL. Because the fetus was nonviable, the initial plan was to induce labor with pitocin in an attempt to avoid possible peripartum complications during later stages of her leukemia treatment. Induction of labor was not attempted, however, because the patient's cervical os was closed, and there was no evidence of effacement.

After receiving informed consent, she was started on ATRA 45 mg/m$^2$/day and within 24–36 hr began having regular contractions, 3–5 min apart. At this time, her cervix was 3 cm dilated and she was 80–90% effaced. Within the next 6 hr she was fully dilated and the fetus and placenta were delivered without any hemorrhagic complications. As expected, the baby died within 30 min of delivery. The patient had not been started on other medications or had other interventions. The patient remained hospitalized and on ATRA for 24 days. She achieved complete remission, had minimal symptoms from ATRA, and did not develop retinoic acid syndrome. The patient subsequently received two cycles of anthracycline/cytarabine-based chemotherapy and has remained in complete remission for 20 months.

The treatment of APL has significantly changed since the introduction of ATRA therapy. Although retinoids are teratogenic, there have been recent reports of pregnant women with APL successfully completing their pregnancies and delivering healthy newborns while on ATRA. This case involves an unusual combination of clinical features, and resulted in an outcome that has not been previously described. It is unclear by what mechanism ATRA would induce labor; however, the temporal proximity of ATRA with the prompt and unexpected initiation of labor suggests a causal relationship. Given the limited number of patients who have received ATRA during pregnancy, it is currently not known if this will be a more common observation. Additional reports of ATRA during pregnancy will need to be compiled to further assess its safety.

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## Pure Red-Cell Aplasia Requiring Cytotoxic Chemotherapy: Presence of Clonal T-Lymphocytes Without Characteristics of Chronic Lymphocytic Leukemia

*To the Editor:* Pure red-cell aplasia (PRCA) is a rare hematological disorder characterized by a selective reduction of erythropoiesis and an association with immunological abnormalities, probably as an inhibition of erythropoiesis by T cells [1]. Immunosuppressive therapies with prednisolone, cyclosporin, and antithymocyte globulin are sometimes effective, but refractory cases are often observed. Less than 10% of chronic lymphocytic leukemias (CLL) are complicated with PRCA and are at advanced stages (Rai classification 2–4) [2,3]. For these cases, cytotoxic chemotherapies have been effective by eliminating CLL-cells.

We report on a 48-year-old woman with PRCA diagnosed in September 1989, who was refractory for prednisolone and cyclosporin. She was without any characteristics of CLL, whereas she had some clinically profound characteristics. First, surface-marker analysis of peripheral lymphocytes indicated an increase of the proportion of suppressor/cytotoxic T cells (75.4% CD8+ and 20.4% CD4+ cells). Second, erythroid colony formation from bone marrow was decreased to 15.3 $\pm$ 1.0 per 2.5 $\times$ 10$^4$ mononuclear